WOODFORD COUNTY, KENTUCKY

Woodford County is part of the Lexington-Fayette County, Kentucky Metropolitan Statistical Area (MSA). It is located southeast of Scott County, east of Fayette County, northeast of Jessamine County, northwest of Mercer County, east of Anderson County, and southeast of Franklin County. The northern tip of the county lies on the I-64 east-west interstate corridor.

EPA's June 29, 2004 proposal on appropriate designations for Kentucky included Woodford County as nonattainment based on the following criteria:

- EPA indicates that Woodford County has significant (based on 10,000 tpy of any pollutant as being significant) SO_x, NO_x, and PM emissions that potentially contribute to the violating MSA monitor.

Emissions Data

In Kentucky's original February recommendations, 1999 NEI data was used in the original analysis.

However, in EPA's June 29, 2004 letters to states, EPA looked outside the original MSA boundaries to determine if large emissions contributions from adjacent areas were having an impact on $PM_{2.5}$ levels in many of the areas. EPA also used the 2001 NEI which provided slightly newer data than had been recommended that states use.

Based on EPA's interpretation of 10,000 tpy as being significant, Woodford County's emissions would not be considered significant. Woodford County emits only 4% of SO_x emissions from the counties recommended by EPA as having the potential to impact the violating monitors. A similar comparison can be made with both NOx and PM. Woodford County's NOx emissions rank at 8% of the total EPA recommended areas, and PM at 6%. In a detailed review of EPA's recommended areas to be designated nonattainment, Woodford County ranks consistently at less than or equal to 8% of combined emissions contributions within EPA's proposed nonattainment boundaries. Woodford County emits less than 5,000 tpy of any pollutant under review. See Figures 1-4 below.

Figure 1

Lexington Area SOx Emissions in EPA Proposed Nonattainment Counties

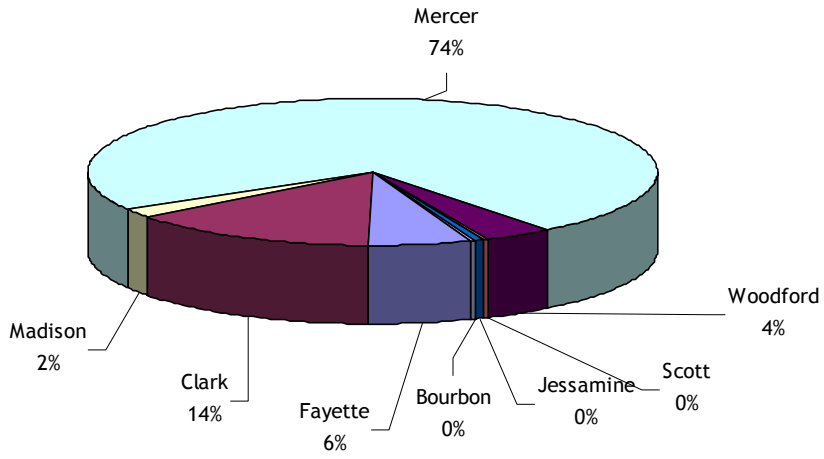


Figure 2

Lexington Area 2001 NOX Emissions

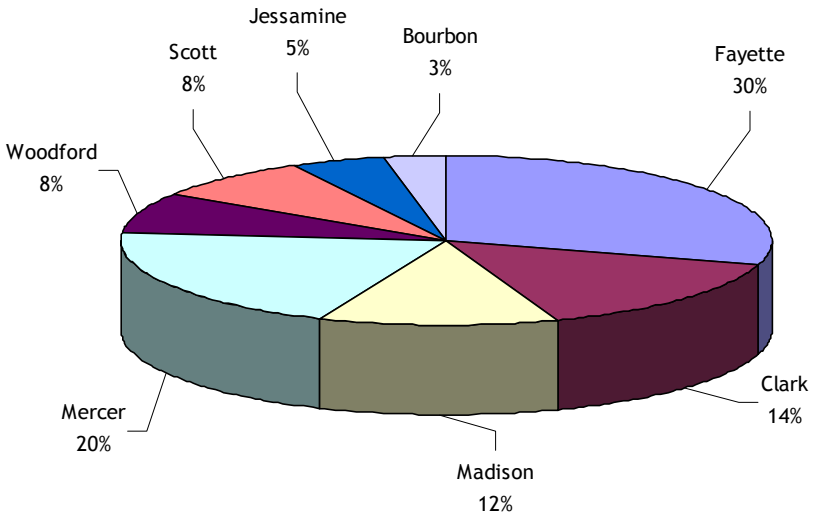


Figure 3

Lexington Area PM Emissions in EPA Proposed Nonattainment Counties

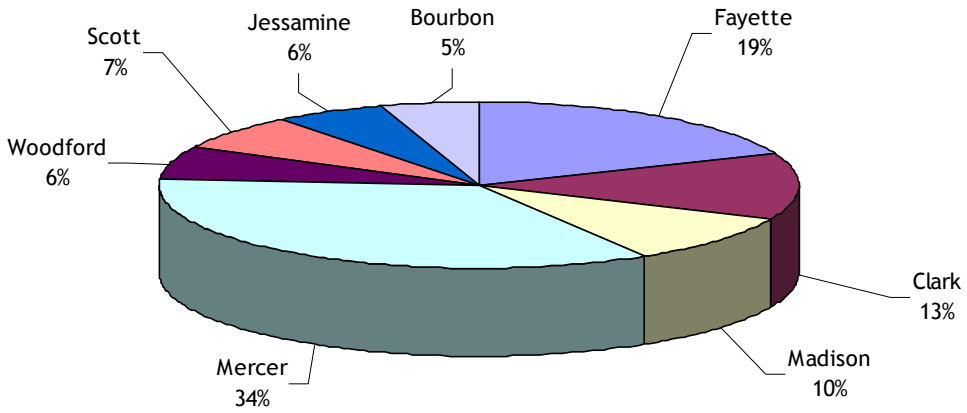
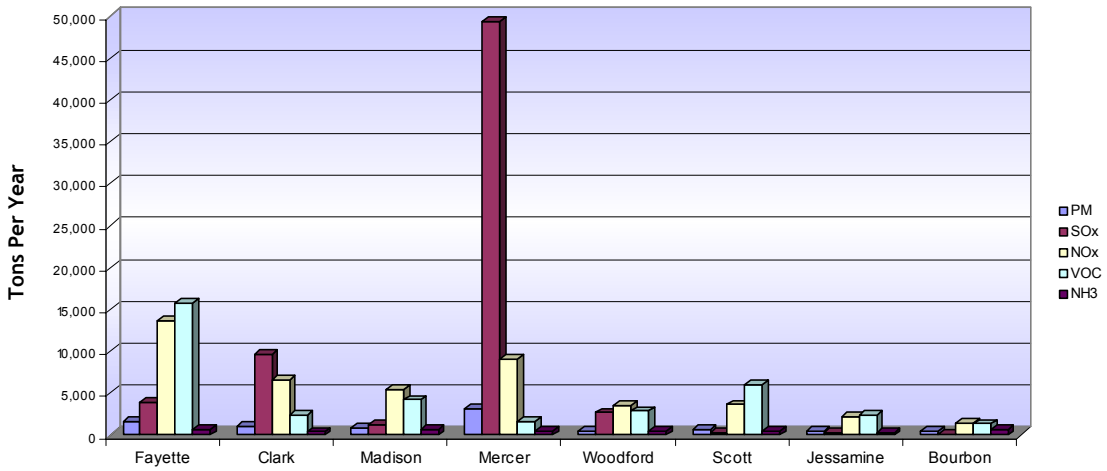


Figure 4

Lexington Area Counties Emissions 2001



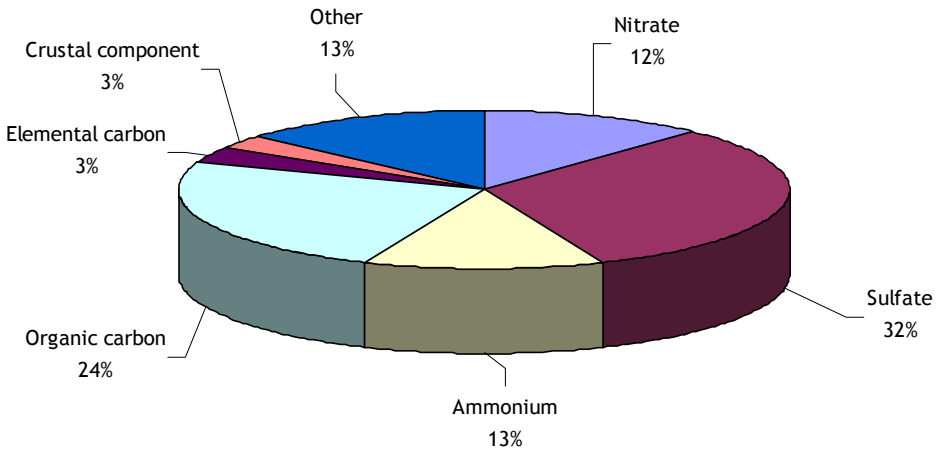
Monitoring Data and Trends

As can been seen in Figure 5 below, the speciation data from Kentucky's Lexington speciation monitor indicates that sulfate is the major component of the $PM_{2.5}$ values. As can be seen in Figure 1 above, Woodford County

contributes only 4% of the SO_x in the area of proposed nonattainment counties by EPA.

Figure 5

Lexington Speciation Monitoring Data 2001-2003
Average Concentration (µg/m³)



The MSA has three monitors located within its boundaries, two in Fayette County and one in Madison County. $PM_{2.5}$ monitoring levels have continued to decline at all three monitors within this region. (See Figure 6 below)

Fayette County has two $PM_{2.5}$ monitors, one located in a central urban area in the midst of the downtown, University of Kentucky campus (Limestone), and the other located on an arterial roadway located 1.9 miles north of downtown (Newtown Pike).

The Newtown Pike monitor shows attainment with the standard, having an average of 14.9 $\mu g/m^3$ over the time period 2001-2003, and having an average of 13.6 $\mu g/m^3$ through April 2004.

The latest average through April 2004 for the Limestone monitor is 14.7 $\mu g/m^3$. The current design value of 15.6 $\mu g/m^3$ is based on the 2001-2003 time period.

Even though Woodford County does not have a monitor, the $PM_{2.5}$ levels have decreased by 15% at the Newtown Pike monitor, 12% at the Limestone monitor, and 13% at the Madison County monitor (See Figure 7 below).

Figure 6

Fayette Area PM2.5 Trend Utilizing Most Current Available Data

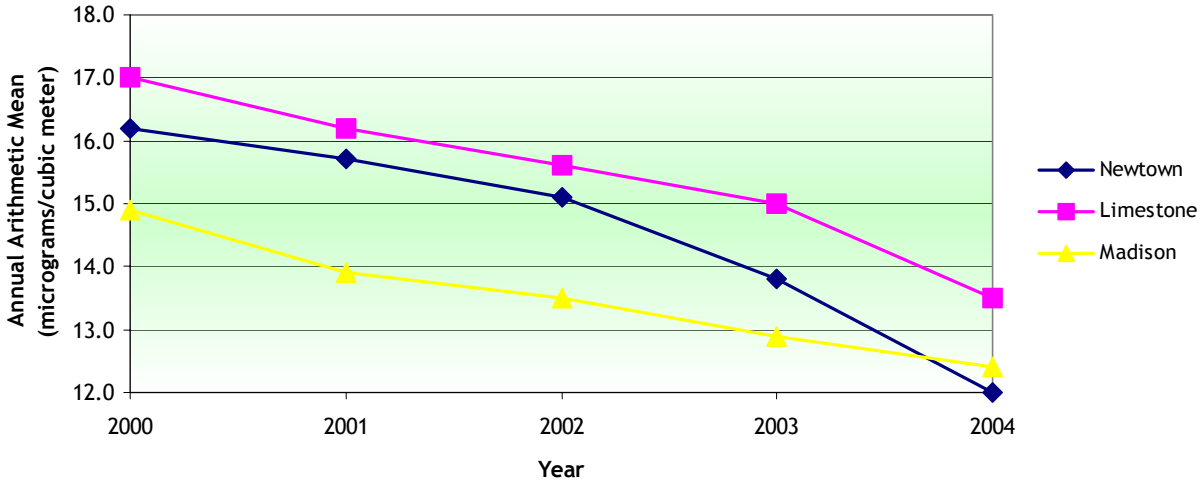
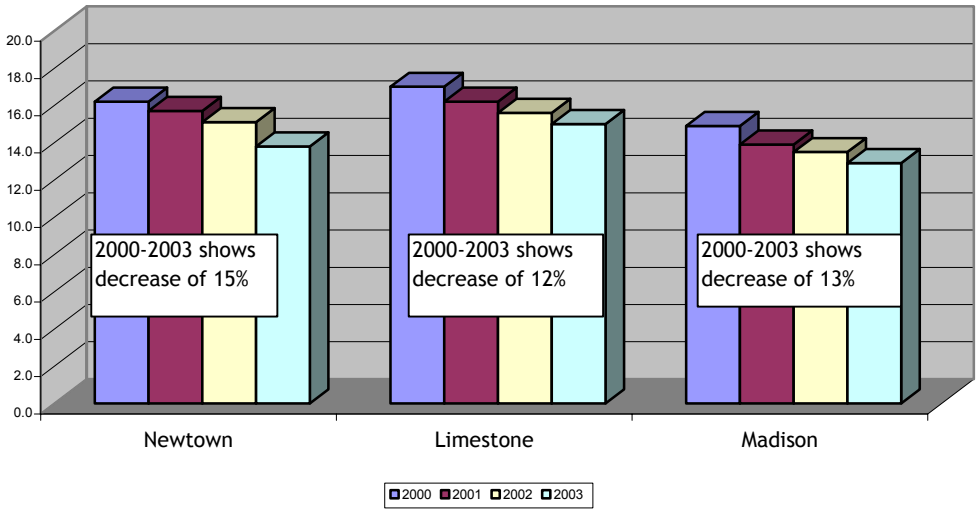


Figure 7

Decline in PM Values for the Fayette Area



Localized vs Regional Impacts

It is Kentucky's position that the monitor located on the UK Campus exhibits an "Urban Core Phenomenon." That is, the monitor's location is at the center of a large public university situated in a downtown metropolitan area with significant activity having a direct relationship to the $PM_{2.5}$ levels being monitored.

This monitor is bracketed by numerous large and small boilers on the University of Kentucky campus and is located adjacent to continuing construction on the campus. Significant local impacts are occurring due to not only the close proximity of the boilers, but also from the emission contributions of construction equipment in the area. This monitor is located only 1.9 miles from the monitor showing attainment of the standard on Newtown Pike.

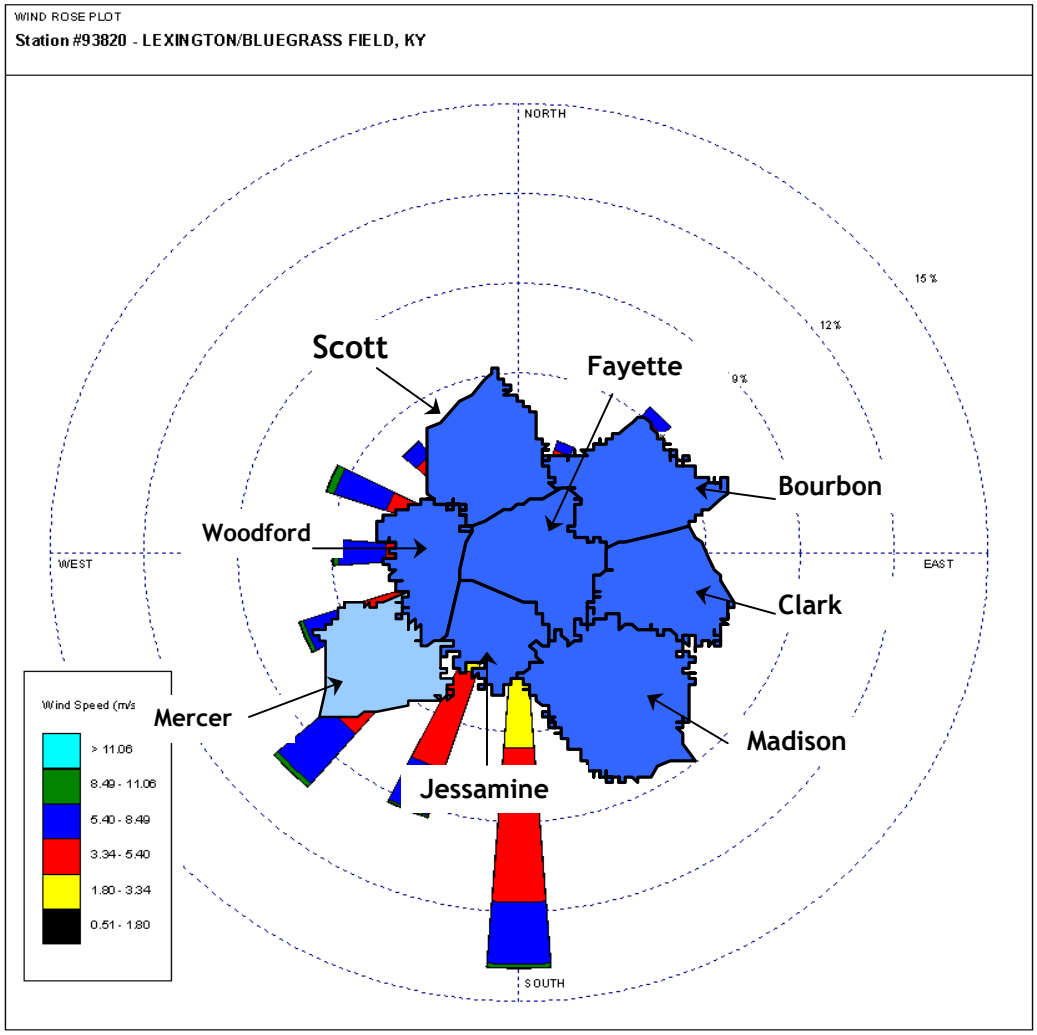
If significant regional impacts from emissions from Woodford County were occurring, they would be expected throughout the regional monitoring network and not at one specific monitor in downtown Lexington.

Meteorology

EPA's response to Kentucky stated that the wind speed/wind direction data provided by Kentucky in the February submittal did not play a significant role in the decision making process and that the information was for summertime winds. Kentucky offers the following information.

As shown in the updated wind rose in Figure 8 below, the majority of the time the wind in the Lexington area comes from the south and the southwest. Woodford County is east-northeast from the violating monitor in Fayette County. The wind rose data indicates that Woodford County does not impact the monitor in violation. The monitoring site more directly impacted by activity in Woodford County is the monitor showing attainment of the standard.

Figure 8


WIND ROSE PLOT
Station #93820 - LEXINGTON/BLUEGRASS FIELD, KY
NORTH
EAST
SOUTH
WEST
15 %
12 %
9 %
Scott
Fayette
Bourbon
Woodford
Clark
Mercer
Madison
Jessamine
Wind Speed (m/s
> 11.06
8.49 - 11.06
5.40 - 8.49
3.34 - 5.40
1.80 - 3.34
0.51 - 1.80

Additional Regional/National Controls

The implementation of new federal rules to decrease the amount of sulfur in both gasoline and diesel fuel will significantly decrease the amount of SO_2 in the entire area. Because of the Low Sulfur Diesel Rule, in 2007, new clean engines operating on 15-ppm sulfur diesel fuel will reduce NOx emissions by 50%, and reduce PM emissions by more than 90%. Due to the Tier 2 Vehicle and Gasoline Sulfur program, by 2006 average national gasoline sulfur levels will be 90% lower.

Upon implementation of the Clean Air Interstate Rule (CAIR) SO_2 emissions from power plants will be reduced nationwide by 3.6 million tons in 2010 (approximately 40 percent below current levels) and by another 2 million tons per year when the rules are fully implemented (approximately 70 percent below current levels). NO_x emissions would be cut by 1.5 million tons nationwide in 2010 and 1.8 million tons annually in 2015 (about 65 percent below today's levels).

The first phase of compliance under the CAIR rule to reduce both SO_2 and NO_x emissions would be required by 2010, allowing substantial emission reductions in the area, by the proposed attainment date for $PM_{2.5}$ nonattainment areas.

Conclusions

Based on the factors discussed above, Kentucky believes that Woodford County should be designated attainment for the $PM_{2.5}$ standard.

- Kentucky believes that EPA's use of the weighted emissions scoring approach was skewed. EPA did not include adjacent county emissions in the total emissions being analyzed for the area. If the emissions from the entire area under review were used, vs just those within the MSA, a very different result in the weighted emissions scores would have occurred. Woodford County would not have the potential to contribute significantly to $PM_{2.5}$ levels within the region.

- The only monitor showing a violation throughout the entire eight county region is being impacted by extreme urban core activities in a specific geographic location within Fayette County.

- $PM_{2.5}$ levels continue to decline throughout the entire region. From a review of all monitors in the region, an average decline of 13% in $PM_{2.5}$ levels has occurred from 2000 through 2003. Every monitor in the region

is currently showing values well within attainment of the annual $PM_{2.5}$ standard using 2002 through 2004 data.

- Additional emission reductions on a national and regional level will provide substantial additional emission reductions in the region. The anticipated sulfur reductions due to the Low Sulfur Diesel Rule, the Tier 2 Vehicle and Gasoline Low Sulfur programs, and the Clean Air Interstate Rule (CAIR) will further lower pollutant levels within this region.

To have this county designated nonattainment would invoke additional substantial and unnecessary requirements on local government planning agencies. Drastic emission reductions are scheduled to occur in the mobile sector throughout the next several years that will greatly impact pollutant levels in the area. In addition, reductions anticipated by the CAIR provisions, the air monitoring data demonstrating attainment of the $PM_{2.5}$ Standard at two of the three monitors in the area, the downward trend in monitored values, and Kentucky's position that the monitored violation of the standard in the downtown area is the result of a localized "urban core phenomenon," lead to the conclusion that Woodford County, Kentucky, should be designated attainment for the $PM_{2.5}$ Standard.